EDUCATIONAL TOY

FIELD OF THE INVENTION

The present invention relates generally as indicated to an educational toy and, more particularly, to an educational toy having a host structure and items selectively attachable thereto.

BACKGROUND OF THE INVENTION

Children generally enjoy toys that allow them to manipulate different parts of the toy so as to produce a certain result and/or changing characteristics. For example, children enjoy catching items, dressing up stuffed animals, and/or putting together puzzles. These activities typically help to develop fine motor skills and hand-eye coordination. However, a parent usually needs to be participating to assist the child with placement problems or errors, to congratulate the child for placement successes, to encourage the child to try new things, and/or to provide any other type of educational feedback.

SUMMARY OF THE INVENTION

The present invention provides a toy that allows a child to develop fine motor skills and hand-eye coordination while at the same time receiving corrective advice, congratulations, and encouragement without direct parental participation. The present invention, among other things, provides such educational feedback without requiring mature manipulative skills (*e.g.*, requiring the child to place complex parts into an opening in just the right manner) and/or without the need for complicated circuitry running throughout the toy. In this manner, an educational toy can be easily constructed without compromising the optimum or desired "toy shape."

More particularly, the present invention provides a toy that comprises a host structure, a plurality of attachable items which can be selectively attached to the host structure, and an identification device. The identification device comprises at least one reader and a plurality of tags which, when read by a reader, provide identification information particular to that tag. Each reader is

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housed by the host structure and the tags are each housed by one of the plurality of attachable items. A reader reads the identification information from a particular tag at the time that the corresponding attachable item is attached to the host structure. Different outputs are generated depending upon which attachable item has been identified by the reader.

The identification device is preferably a radio frequency identification device. In such an identification device, the reader(s) broadcast a radio frequency activation signal, which is received by one of the tags at the time that the corresponding attachable item is attached. The tag is thereby powered to transmit identification information to the reader, and this information is used to generate the appropriate output. Alternatively, the identification device could be a bar code identification device, wherein each tag comprises a bar code printed on the attachable item and wherein each reader reads the bar code to obtain identification information. Moreover, any other type of suitable identification system (namely, one that does not require a child to have strong manipulative skills and does not require complicated circuitry running throughout the toy) is possible with, and contemplated by, the present invention.

The host structure can be constructed so as to be able to house only one reader and permit the attachment of only one of the attachable items at a time. Alternatively, the host structure can house a plurality of readers, and a plurality of the attachable items may be simultaneously attached to the host structure. In either case, the generated outputs may be audio and/or visual, may occur on the host structure and/or the attachable items, and/or may change dependent upon the selected mode of operation. The outputs can correspond to names (*e.g.*, the name of the attached item), colors (*e.g.*, the color of the attached item) and/or numbers (*e.g.*, the number printed on the attached item). With particular reference to situations in which a plurality of the attachable items can be simultaneously attached to the host structure, an output can be generated when all of the items are attached to the host structure.

In a first illustrated embodiment of the invention, the host structure resembles a fishing rod and the attachable items (*e.g.*, fish, aquatic animals and/or sea creatures) are attached, one at a time, to an attachment location

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corresponding to where a fish would be caught by a fishing rod. In a second illustrated embodiment of the invention, the host structure resembles a personality-void head, and the attachable items resemble hat-like masks which can be fitted over, one at a time, the host structure to impart personality thereto.

5 In a third illustrated embodiment of the invention, the host structure resembles a torso (*e.g.*, a teddy bear torso), and the attachable items resemble body parts (*e.g.*, arms, legs, ears, nose, etc.) that are attachable to the torso.

These and other features of the invention are fully described and particularly pointed out in the claims. The following description and annexed

10 drawings set forth in detail certain illustrative embodiments of the invention, these embodiments being indicative of but a few of the various ways in which the principles of the invention may be employed.

DRAWINGS

Figure 1 is a perspective view of a toy 10 according to one embodiment of

15 the invention.

Figure 2 is a schematic diagram of the identification device 30 of the toy 10.

Figures 3A - 3D are perspective views of a toy 110 according to another embodiment of the invention.

20 Figure 4 is a schematic diagram of the identification device 130 of the toy 110.

Figures 5A - 5C are perspective views of a toy 210 according to another embodiment of the invention.

Figure 6 is a schematic diagram of the identification device 230 of the toy

25 210.

Figure 7 is a schematic diagram of an alternate identification device 330.

DETAILED DESCRIPTION

Referring now to the drawings, and initially to Figure 1, a toy 10 according to one embodiment of the invention is shown. The toy comprises a host

30 structure 12 and a plurality of attachable items 14. In the embodiment illustrated

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in Figure 1, the host structure 12 resembles a fishing rod and the attachable items 14 resemble different kinds of fish, aquatic animals, and/or sea creatures. That being said, it should be understood that the host structure 12 does not have to resemble a fishing rod and/or the attachable items 14 do not have to resemble such creatures. For example, the host structure 12 could resemble a crane (or other structure having a cord design to attach items at its distal end) and/or the attachable items could resemble houses, plants, people, flowers, etc.

The host structure 12 comprises an attachment location 16 that actually "catches" the attachable items 14. The attachment location 16 is preferably situated at a location corresponding to where a fish would be caught by a fishing rod and, in the illustrated embodiment, the attachment location 16 resembles a bobber at the end of the rod's fishing line. The host structure 12 (e.g., the fishing rod) is designed to "catch" one attachment item 14 (e.g., one fish) at a time, and thus has only one attachment location 16.

When a child lowers the attachment location 16 (e.g., the bobber) towards an attachable item 14 (e.g., a fish), attachment therebetween can be accomplished in an appropriate manner. By way of an example, and as is shown in the illustrated embodiment, mating magnetic elements 18 and 20 (e.g., a magnet and a metal strip) can be situated on the bobber 16 and the attachment item 14, respectively, so that once a certain proximity is reached, attachment will occur. By way of another example, complimentary hooks and loops (e.g., VELCRO™) could be placed on the attachment items 14 and the attachment location 16. In any event, the connectors 18 and 20 are preferably selected so that the child can detach a "caught" item 14 so that parental participation is not necessary for continued play.

Referring now to Figure 2, the toy 10 additionally comprises a radio frequency identification device 30. The device 30 includes a reader 32 and a plurality of tags 34 that, when read by the reader 32, provide identification information unique to that attachment item 14. Since the toy 10 is designed to "catch" one item 14 at a time, it has only one reader 32.

The reader 32 is housed by the host structure 12 (see Figure 1) and comprises an antenna 36 and a decoding transceiver 38. The tags 34 are each

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housed by one of the plurality of attachable items 14 and each includes a receiver 40, an integrated circuit 42 (which stores encoded identification information), and a transmitter 44. The reader 32 is positioned adjacent to the attachment location 16 on the host structure 12, and the tags 34 are positioned
5   adjacent to the expected attachment area of the items 14.

A power supply 50, a host computer 52, and an output generator 54 (e.g., visual display and/or speaker) coordinate with the identification device 30 to generate different outputs for the different attachment items 14. Specifically, when the power supply 50 is turned on, the reader's transceiver 38 emits an
10   activation signal, which is broadcast by the antenna 36. Once an attachable item 14 passes through the electromagnetic field created by the broadcast (e.g., when the attachable item 14 attaches to the attachment location 16), the activation signal is received by the radio frequency receiver 40. The integrated circuit 42 is then powered, and the stored encoded identification information
15   (e.g., a 32 bit word or 128 bit word) is transmitted and received by the reader's transceiver 38. The transceiver 38 decodes the transmitted identification information and sends it to the host computer 52, whereat it acts like a "key" to a database of information stored on the computer. Thus, the reader 32 reads the identification information from a particular tag 34 when the corresponding
20   attachable item 14 is attached to the host structure 12 at the attachment location 16. In this manner, different outputs are generated depending upon which attachable item 14 has been identified by the reader 32.

When an attachable item 14 is "caught" by the host structure 12, the toy 10 can announce to the child what has been caught (e.g., gold fish, octopus,
25   shark, etc.). Additionally or alternatively, a variety of theme sets can be developed. For example, the toy 10 can announce the color of the fish, the numeral printed on the fish, or any other feature. Depending upon the age of the child, the toy 10 could add the number of "fish" caught, the numerals printed on the fish or do other simple math. Moreover, the toy 10 can have different
30   modes of operation so as to accommodate children of different ages (see mode switch 48 in Figure 2), whereby the toy 10 would be a "grow-with" toy.

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Referring now to Figures 3A - 3D, a toy 110 according to another embodiment of the invention is shown. The toy 110 is similar to the toy 10 in many ways and comprises a host structure 112 and a plurality of attachable items 114. In the illustrated embodiment, the host structure 112 resembles a

5   personality-void head (e.g., a spherical object with eyes and mouth painted thereon), and the attachable items 114 resemble different hat-shaped accessories (e.g., masks, wigs, etc.) that can impart personality or other attributes.

As with host structure 12 of the toy 10, the host structure 112 of the toy

10   110 is designed to accommodate one item 114 at a time, and thus has one attachment location 116 which, in the illustrated embodiment, is the northern hemisphere of the sphere. The toy 110 does not include and/or need connectors (e.g., like the connectors 18 and 20 in toy 10) because the attachable items 114 are made of a stretchable fabric that is sized and shaped

15   to fit around the northern hemisphere of the host structure and over the attachment location 116. However, in certain situations, connectors can be used if necessary or desired.

Referring now to Figure 4, the toy 110 also comprises a radio frequency identification device 130. The device 130 is in many ways the same as the

20   above-described device 30, whereby like reference numerals are used (with "100" added thereto). Thus, the radio frequency device 130 includes a reader 132 and a plurality of tags 134. In addition to a radio frequency receiver 140, an integrated circuit 142, and a transmitter 144, the tags 134 each further include an LED 146 for providing a light response. When the tag 134 comes within

25   broadcast range of the reader 132, the power obtained by the incoming signal is sufficient to power the LED 146 (as well as the integrated circuit 142). In this manner, the attachment items 114 do not include any separate source of power (e.g., their own batteries) in order to generate a response.

When an attachable item 114 is "worn" by the host structure 112, the toy

30   110 is assigned a personality/character and it comes "to life." Specifically, the host structure 112 and/or the attached item 114 can vibrate, light up, or otherwise generate a response corresponding to the attached item. For

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example, the toy 110 can start making corresponding character sounds (*e.g.*, "moooo" for a cow, "oink" for a pig, etc.). A single sound would be appropriate for younger children while longer word texts *(e.g.*, three to six cycling messages) would be appropriate for older children. Additionally or alternatively, the

5 attachment items 114 can include numbers and/or letters, and the responses can be designed to teach the alphabet and/or number patterns.

Referring now to Figures 5A and 5B, a toy 210 according to another embodiment of the invention is shown. The toy 210 is similar to the toy 10 in many ways and comprises a host structure 212 and attachable items 214. In

10 this embodiment, the host structure 212 resembles a torso (*e.g.*, a teddy bear's torso) and the attachable items 214 resemble different body parts (*e.g.*, left arm, right arm, left leg, right leg, tail, eyes, nose, ears, etc.). Color dots or other matching aids (not shown) can be provided on the host structure 212 and the attachable items 214 to help the child match up the body parts to the torso.

15 In this embodiment, the host structure 212 is designed to "attach" all of the items 214 at one time and, to this end, includes a plurality of attachment locations 216 and corresponding connectors 218 and 220. In the toy 210, hook-and-loop (*e.g.*, VELCRO™) connecting components are preferred; however, magnets and other suitable connectors could be used instead. In fact, in some

20 forms of the toy 210, the connectors 218 and 220 might not be necessary.

Referring now additionally to Figure 6, the toy 210 also comprises a radio frequency identification device 230, which includes a plurality of readers 232 (one for each attachment location 216) and a plurality of tags 234 (one for each attachable item 214). The identification device 230 is similar to the identification

25 device 30, and thus like reference numerals (with "200" added thereto) are used for corresponding components.

When an attachment item 214 (*e.g.*, a body part) is attached to an attachment location 216, a suitable response can be provided. For example, if the "left arm" attachment item 214 is placed in the "nose" attachment location

30 216, the toy 210 can say "try again, that's not my nose" and, if the "left arm" is appropriately placed, the toy 210 can say "very good, that's my left arm!" Additionally or alternatively, the host structure 212 could light up once an

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attachment item 214 is correctly attached. (The attachment items 214 could also light up upon attachment if LEDs like those described above in connection with toy 110 are incorporated into the toy 210.) This play can continue until all the body parts 214 are attached to the torso 212 and, upon such completion, the

5   toy 210 can generate another response. For example, upon attachment of all of the body parts 214, the toy 210 can "come to life" by singing songs, blinking lights, asking questions about where certain body parts are located, etc.

In the identification devices 30, 130 and 230 discussed above, the reader(s) and the tags are designed for recognition by radio frequency patterns.

10   This is the preferred form of the identification device as it requires very little space, is very reliable, and does not require precision attachments. That being said, these identification devices 30, 130 and 230 could be replaced with the bar code identification device 330 shown schematically in Figure 7. The device 330 is designed for incorporation into the toy 310, whereby like reference numerals

15   are used to identify corresponding parts (with "300" added thereto). In this embodiment, however, the reader 332 is a bar code reader and the tag 334 comprises a bar code printed on the attachable item 314. Similar bar code devices could be structured for the toys 110 and 210 by simply replacing each reader 132/232 with a bar code reader and replacing each tag 134/234 with a

20   bar code tag 334. Moreover, other types of suitable identification systems could be substituted for the devices 30, 130 and/or 230.

One may now appreciate that the present invention provides a toy 10/110/210 that allows a child to develop fine motor skills and hand-eye coordination while at the same time receiving corrective advice, congratulations,

25   and encouragement without direct parental participation. The present invention can provide such educational feedback without requiring strong manipulative skills and/or without the need for complicated circuitry running throughout the toy.

Although the invention has been shown and described with respect to

30   certain preferred embodiments, it is evident that equivalent and obvious alterations and modifications will occur to others skilled in the art upon the reading and understanding of this specification.

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